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EFFECTS OF PRUNING TEAK

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Summary

Teak plantations, 8 to 10 years old, were pruned to improve log quality. Of the pruned trees at the ends of rows and adjacent to road clearings, 40 percent produced adventitious branches; 28 percent of trees within the stand branched; only 6 percent of trees inside the stand but without immediate neighbors re-branched.

Trees pruned in August branched less than those pruned in May, which branched less than those pruned in February.

Adventitious branching accompanied the first subsequent leaf flush, regardless of when actual pruning occurred.

Conditions that favored re-branching of many trees also favored initiation of more branches per tree and more trees with multiple branches.

Most adventitious branches developed from or immediately adjacent to pruning wounds, but the proportion that originated away from wounds increased as total new branches increased and as time since pruning increased.

Basal sprouts did not appear to be related to

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pruning. Neither branching nor sprouting appeared to be related to tree height growth.

Resumen

Plantaciones de teca de 8 a 10 años se podaron para mejorar la calidad de las trozas. De los árboles podados en los extremos de las hileras y adyacentes a la carretera, el 40 porciento produjo ramas adventicias, el 28 porciento de los árboles en el rodal ramificó y sólo el 6 porciento de los árboles dentro del rodal que no tenían árboles contiguos ramificó de nuevo.

Los árboles podados en agosto ramificaron menos que los podados en mayo, los que a su vez ramificaron menos que los podados en febrero.

La ramificación adventicia acompañó el subsiguiente primer brote de hojas nuevas sin importar cuándo ocurrió la poda.

Las condiciones que favorecieron la renovación de ramas de muchos árboles también favorecieron el brote inicial de más ramas por árbol y de más árboles con ramas múltiples.

La mayor parte de las ramas adventicias se desarrollaron en los cortes de la poda o junto a estos, pero la proporción que se originó lejos de los cortes aumentó con el aumento total de ramas nuevas y del tiempo transcurrido desde la poda.

Los renuevos de cepa no aparecieron estar relacionados con la poda. Ni la ramificación ni los renuevos de cepa parecen estar relacionados con el crecimiento en altura del árbol.

Early pruning of teak (Tectona grandis) seems advisable in order to improve the quality of the wood and increase merchantable height. However, the pruning of hardwood branches is often followed by the development of adventitious branches and/or basal sprouts.

To determine the effect of pruning on teak, a study was initiated on the Estate Thomas Experimental Forest, St. Croix,

Virgin Islands, in May 1963. The location included 4 plots of teak of the following ages: Plot 1, 10 years; Plot 2, 9 years; Plots 3 and 4, 8 years. Trees averaged only 8 to 10 meters (25 to 33 feet) tall, as the site is moderately shallow soil over marl, with a rainfall of about 1100 mm (43 inches). Initially, each plot contained 2 or more rows of 9 to 43 trees each, but management thinnings, unrelated to this study, reduced the numbers during the study.

All plots were pruned in May or August 1963, February 1964, and August 1965. Trees were pruned with saws, to a height of about 3 meters (10 feet) above the ground, 30 to 40 percent of the total height.

Adventitious branches and basal sprouts were tallied immediately prior to each pruning and, in addition, in August 1964, March 1965, January 1966, and January 1967. Tallies after August 1964 also showed whether the adventitious branches developed from pruning wounds.

Exterior versus Interior. Since exposed trees at the ends of the rows seem to produce more adventitious branches than trees within the rows, two categories were established: Exterior, trees at the ends of all rows plus those trees within the rows which had no neighbor within 2.7 meters (9 feet); and Interior, trees within the rows which had four neighbors within 3.0 meters (10 feet).

Of the 179 trees tallied in January 1967 on all plots, 46 were classified Exterior and 36 were Interior. Twenty-eight percent of both Interior and Exterior trees had adventitious branches and/or basal sprouts.

Exterior trees were then separated still further: (1) trees at the end of rows and (2) trees within the stand but without neighbors within a 2.7-meter radius. Of the former 30 trees, 40 percent had adventitious branching; however, the 16 trees within the stand included only a single adventitious branch.

Season of pruning. Adventitious branching following pruning varied greatly with the season of pruning, as may be seen in the data collected approximately four months after the pruning, Table 1.

Of those stems which produced adventitious branches, the number of new branches per stem varied similarly. Again, tallies were made four months after the prunings.

Table 1.--New branching four months after pruning, as related to season of pruning

Month of pruning	Trees with new branches	New branches per tree
	(percent)	
February 1964	43	2.4
May 1963	26	2.0
August, average of 1963-1965	8	1.3

Delay in adventitious branching. Delayed branching also appeared to be related to season of pruning. Teak produces most new leaves during the period May to July, and appreciable branching occurred during that period regardless of the time of pruning.

Table 2.--Delay in adventitious branching as related to season of pruning

Assessment	Month of Pruning February 1964	August 1965
	Trees with new branches	
End of first growing season	43 percent	11 percent
After a leaf flush	43	20
	New branches per tree	
End of first growing season	2.4	1.4
After a leaf flush	2.2	1.6

As shown in Table 2, tallies made at the end of the growing season indicated that only one-fourth as many of the trees produced adventitious branches following an August pruning as did after pruning in February. However, a tally 12 months after pruning, thus including at least one leaf flush, nearly doubled the percentage of August trees with adventitious branches. Pruning in August still yielded fewer branches than pruning in February, by a ratio of more than 2:1, but a realistic evaluation of adventitious branching following pruning must be after a leaf flush.

Number of new branches on re-branched stems varied in the same manner.

Number of adventitious branches per tree. The number of trees with more than one adventitious branch varied with the percentage of branched trees.

Trees with branches	Branched trees with multiple branches
(percent)	(percent)
6	17
11	28
20	49
57	57

In other words, conditions that favored branching of many trees also favored more branches per tree, as shown in Tables 1 and 2, and more trees with multiple branches.

Origin of branching. Percentage of adventitious branches not originating from or adjacent to pruning wounds varied from 10 to 42 percent. The pattern of variation was not apparent except that when more branching occurred a larger proportion of the branches did not originate from pruning wounds, and such branches did not start as quickly as those from wounds.

Trees with branches	Branches not from wounds
(percent)	(percent)
After four months	
11	10
43	38
After twelve months	
20	33
43	42

Sprouting. At the time the study was initiated 30 percent of the trees had basal sprouts. They were removed, and at no subsequent tally did sprouting average more than 5 percent. Apparently pruning did little to promote basal sprouts.

Growth rate. The 6 fastest and the 6 slowest growing trees in each of Plots 1, 2, and 3 were compared. Mean height growths were 2.4 m (7.8 ft) and 0.5 m (1.6 ft), respectively. Initial tallies, as well as subsequent counts showed no relationship of either branching or sprouting to growth rate.